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(54) **Packaging platform, optical module using the platform, and methods for producing the platform and the module**

(57) A packaging platform (11,21,33,61) for optically coupling one or more optical waveguides of one or more optical components (15,22,31,65) to one or more optical fibers is provided with a reference structure portion (31-

10a,31-10b,33-10a,33-10b,33-6,80-10a,80-10c,80-10d) for the horizontal and vertical positioning of the optical component (15,22,31,65) and one or more fiber positioning portions (33-1) for inserting and holding the

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optical fiber and positioning the optical fiber at a position where the optical fiber is optically connected to the optical waveguide; whereby the packaging platform (11,21,33,61) and an optical module using the platform

are provided which can simplify all alignment steps for optical coupling, electrical connection and sealing in the coupling of the optical component and the optical fiber.

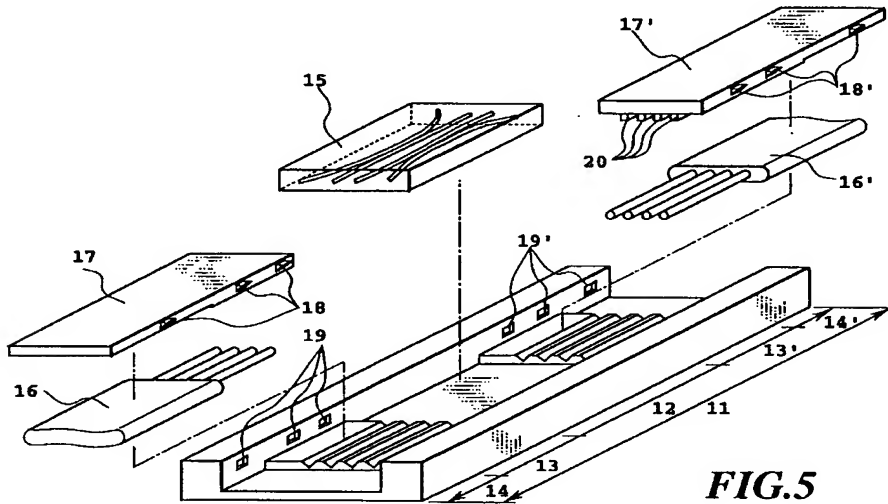


FIG. 5



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EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	EP 0 532 470 A (SUISSE ELECTRONIQUE MICROTECH) 17 March 1993 (1993-03-17)	1-6, 8, 10-12, 22, 26-30, 49, 50, 52	G02B6/42
X	* column 7, line 23 - column 8, line 43; claim 1; figure 2 *		
Y	* column 8, line 47 - column 9, line 36; figures 3A.3C *	35, 36	
		7, 13-21, 23-25, 31-34, 37-48, 51	
X	US 5 555 331 A (BILLET GILLES ET AL) 10 September 1996 (1996-09-10)	1, 3-6, 10-12, 22	
Y	* column 1, line 33 - line 59; figure 1 *		
	* column 3, line 63 - column 4, line 11 *	37-39	
X	EP 0 466 134 A (GTE LABORATORIES INC) 15 January 1992 (1992-01-15)	1, 2, 4-6, 8-12, 22, 26-28, 30, 49, 50	TECHNICAL FIELDS SEARCHED (Int.Cl.6) G02B
	* column 3, line 52 - column 5, line 32; figures 1-3 *		
Y	DE 42 17 553 A (QUANTE AG) 2 December 1993 (1993-12-02)	7, 51	
	* column 6, line 16 - line 53; figure 4 *		
Y	US 5 488 678 A (TANEYA MOTOTAKA ET AL) 30 January 1996 (1996-01-30)	31-34	
	* figures 3-5; examples 1-3 *		
A	EP 0 723 171 A (HITACHI LTD) 24 July 1996 (1996-07-24)	3, 29	
	* claim 1: figure 1 *		
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The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 27 July 1999	Examiner Lord, R
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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A	FRIEDRICH E E L ET AL: "HYBRID INTEGRATION OF SEMICONDUCTOR LASERS WITH SI-BASED SINGLE-MODE RIDGE WAVEGUIDES" JOURNAL OF LIGHTWAVE TECHNOLOGY, vol. 10, no. 3, 1 March 1992 (1992-03-01), pages 336-340, XP000272892 * paragraph '00IV!; figures 3,4 *	9	
Y	PATENT ABSTRACTS OF JAPAN vol. 097, no. 006, 30 June 1997 (1997-06-30) & JP 09 054227 A (NIPPON TELEGR & AMP; TELEPH CORP & LT; NTT & GT;), 25 February 1997 (1997-02-25) * abstract *	13-20, 23-25, 40-47	
Y	PATENT ABSTRACTS OF JAPAN vol. 009, no. 166 (C-290), 11 July 1985 (1985-07-11) & JP 60 038464 A (SUMITOMO KAGAKU KOGYO KK), 28 February 1985 (1985-02-28) * abstract *	14, 18-20, 41,45-47	
Y	US 4 820 761 A (SAITO TERUO ET AL) 11 April 1989 (1989-04-11) * column 1, line 10 - column 2, line 34 *	20,47	
Y	DE 195 47 941 A (BOSCH GMBH ROBERT) 25 July 1996 (1996-07-25) * column 2, line 14 - column 3, line 12 *	21,48	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
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